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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,039

04/14/2004

Weisheng Lei

50001/100:1

7398

3528

7590

08/24/2004

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EXAMINER

EVANS, GEOFFREY S

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/825,039	Applicant(s) LEI ET AL.	
	Examiner Geoffrey S Evans	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20040414</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Claims 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 11 it is unclear how any laser would not fall into one of the three categories (since excimer lasers are UV lasers). The meaning of "UV: YAG" is unclear since no such laser exists.

Respectfully suggest in claim 12 changing "UV:YAG emitting a laser beam" to "YAG emitting a harmonic laser beam".

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6,8,9,10,11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Zahaykevich in WO 86/02301. Zahaykevich discloses laser drilling a pilot hole into a multilayered electronic circuit board (e.g. see page 3, lines 18-24 and page 6,lines 12-16), followed by generating a second laser output having sufficient energy density over a second spatial spot size to remove target material within a second spot area defined by the second spatial size (e.g. see abstract and page 43,line 8 to page 44,line 16) to create a through-hole of the desired size and shape.

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zahaykevich in WO 86/02301 in view of Dunskey et al. in U.S. Patent No. 6,433,301 B1. Dunskey et al. teaches laser drilling a hole having a diameter less than 150 microns (see column 5, lines 45-57) and that it is preferable to use a frequency tripled Nd:YAG laser having a wavelength of 355 nm for forming vias. It would have been obvious to adapt Zahaykevich in view of Dunskey et al. to provide this type of laser to drill holes having diameters less than 150 microns (it is clearly desirable in electronics to reduce the size of vias so that the circuits are as small as possible).

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zahaykevich in WO 86/02301 in view of Williams in EP 544,398. Williams teaches using different lasers having different wavelengths for drilling holes in non-homogenous material. It would have been obvious to adapt Zahaykevich in view of Williams to provide different lasers for the first and second laser outputs to more quickly drill holes in non-homogenous materials.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chang et al. in U.S. Patent Application Publication No.

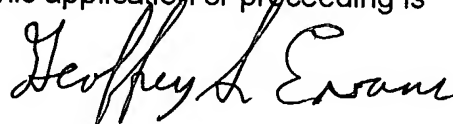
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2002/0104831 A uses a second laser beam output to clean up a ragged hole created by a first laser beam output.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S Evans whose telephone number is (571)-272-1174. The examiner can normally be reached on Mon-Fri 6:30AM to 4:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571)-272-1171. The fax phone number for the organization where this application or proceeding is assigned is (703)-872-9306.

GSE

A handwritten signature in cursive script, reading "Geoffrey S. Evans".

Geoffrey S. Evans
Primary Examiner
Group 1700